California Regional Water Quality Control Board
North Coast Region

Cleanup and Abatement Order No. R1-2000-92a

For

ROYAL PETROLEUM COMPANY
AND
ALLIANCE PETROLEUM CORPORATION

720 South Main street
Sebastopol, California

Sonoma County

The California Regional Water Quality Control Board, North Coast Region, (hereinafter Regional Water Board) finds that:

1. Royal Petroleum Company owns a service station at 720 South Main Street in Sebastopol, California. The service station (hereinafter site) is operated by Alliance Petroleum Corporation.

2. In November of 1985, four petroleum underground storage tanks (UST) were present at the site. The four USTs were apparently installed in 1960 and were comprised of: a waste oil tank; a 7,500-gallon regular leaded gasoline tank; a 5,000-gallon unleaded gasoline tank; and a 2,000-gallon premium leaded gasoline tank. All four USTs were single-walled, steel tanks. In November of 1985, the USTs were tested for leaks, and the 7,500-gallon regular leaded tank and the 5,000-gallon unleaded tank failed the leak test.

3. In 1986, all four single-walled tanks were removed from the site and replaced by three 8,000-gallon double-walled steel tanks. The new double-walled tanks were used to store premium leaded, unleaded, and regular leaded gasoline. The results of analyses of two soil samples collected during the UST removal activity showed that a discharge of gasoline to soil had occurred at the site.

4. Releases of petroleum at the site have affected groundwater. Twenty-two groundwater monitoring wells were installed on or near the site to characterize the contamination. The results of analyses of groundwater samples collected from the monitoring wells revealed that groundwater was contaminated with gasoline, benzene, toluene, xylene, ethylbenzene, 1,2-dichloroethane (1,2-DCA), and methyl-tertiary butyl ether (MtBE). The chemicals 1,2-dichloroethane (1,2-DCA) and MtBE were detected in groundwater at the site. Non-aqueous phase liquid (NAPL) or free-phase product was also found at the site. The free-phase product released at the site was found to contain gasoline, organic lead, 1,2-dichloroethane, and MtBE.

5. Royal Petroleum Company and Alliance Petroleum Company are hereinafter referred to as the dischargers.

6. The depth to groundwater at the site is approximately 53 to 68 feet below ground surface (bgs). The soils underlying the site generally consist of interbedded sands and gravels. In Sebastopol the interbedded sands and gravels are underlain by sandstones of the Wilson-Grove formation, previously known as the Merced formation. These deposits allow abundant use of groundwater as domestic supply. A municipal water supply well for the City of Sebastopol (hereinafter Well No. 4) is located within 200 feet of the site. The total depth of Well No. 4 is approximately 530 feet. During construction of Well No. 4, the static groundwater level was observed at 37 feet bgs, and a yellow sand was described between 35 and 135 feet bgs. The well was sealed to 135 feet, sand packed below this depth, with perforations between 237 and 468 feet. During pumping, the groundwater level is about 76 feet bgs. The regional groundwater flow direction is generally from the west to the east, and is locally affected by pumping wells. During routine use of Well No. 4 for water supply, the well is pumped between six and thirteen hours per day at an average pump rate of 840 gallons per minute (gpm).

7. In 1985, the City of Sebastopol began sampling Well No. 4 in compliance with the California Health and Safety Code. In 1989, the contaminant 1,2-dichloroethane (1,2-DCA), was detected in water samples collected from Well No. 4. The highest recorded concentrations vary approximately from 0.51 to 0.60 ug/l. The maximum contaminant level (MCL) of 1,2-DCA, established by the State Department of Health Services for protection of drinking water, is 0.5 ug/l. Well No. 4 was taken out of service for several months due to contamination by 1,2-dichloroethane. Well No. 4 is currently operating and the City of Sebastopol conducts weekly monitoring for the contaminant. Well No. 4 is periodically shut down when the concentration of 1,2-DCA in the water sample from the well is 0.4 ug/l or higher. The well is kept out of service until resampling shows no detectable levels of 1,2-dichloroethane. The detection limit for 1,2-DCA is 0.1 ppb.

8. 1,2-DCA is difficult to biologically degrade, soluble in water at 8300 mg/l (or 8,300,000 ug/l) at 25°C, and has a density of 1.2351 g/cc. 1,2-DCA is heavier than water, and behaves differently in groundwater than other gasoline constituents. 1,2-DCA is mobile in the environment and spreads laterally and vertically through groundwater. 1,2-DCA is classified as a carcinogen by the U.S. Environmental Protection Agency. The chemical has several uses, including use as a lead scavenger in leaded gasoline.

9. Regional Water Board staff have conducted several investigations to determine the source and threat of contamination and threatened contamination of groundwater in Well No. 4. Potential sources which have been investigated in the vicinity of Well No. 4 include the Shell Service Station located at 778 South Gravenstein Highway, Petaluma Palm Partners located at 651 South Main Street, a former auto body repair shop located at 6901 Palm Drive, and Alliance Service Station. The Alliance Service

Station site is the only potential source area where 1,2-DCA was detected in groundwater. Samples collected in monitoring wells located on and adjacent to the Alliance Service Station contained a concentration of up to 310 ug/l of 1,2-DCA. A free-phase product (leaded gasoline) sample collected from the monitoring well contained a concentration of up to 78,000 ug/l of 1,2-DCA. The Alliance Service Station is located approximately 200 feet from Well No. 4, and is within the radius of influence of Well No 4.

10. In December of 1999, Regional Water Board staff conducted a soil gas survey at the site and other areas within the radius of influence of Well No. 4. The soil gas survey was conducted to determine the pathway of contaminated groundwater flow from the site to Well No. 4. The results of the survey suggest that total petroleum hydrocarbons are migrating from the site toward Well No. 4.

11. In the summer of 1999, discrete groundwater samples were collected at 20-foot vertical increments from Well No. 4 by Regional Water Board staff to determine the depth at which contamination is entering Well No. 4. The analytical results from the sampling event suggest that contamination is entering the well at depths of 100 to 160 feet below ground surface.

12. On December 14, 1994 the Regional Water Board Executive Officer issued Cleanup and Abatement Order No. 94-142 (CAO) for the remediation of the contaminants on and emanating from the site. The CAO required the dischargers to define the vertical and horizontal extent of contamination at the site and develop a final cleanup plan. Considerable work has been completed by the dischargers towards the cleanup and abatement of the pollution at the site. However, additional work is required to abate the discharge and threatened discharge at the site and in the vicinity of Well No. 4. A final remedy for the site, including restoration of the beneficial use of Well No. 4, is needed to clean up and abate the discharges and threatened discharges to groundwater.

13. The dischargers have caused or permitted, cause or permit, or threaten to cause or permit waste to be discharged or deposited where it is, or probably will be, discharged into the waters of the state and creates, or threatens to create, a condition of pollution or nuisance. Continuing discharges are in violation of the Porter-Cologne Water Quality Control Act and provisions of the Water Quality Control Plan for the North Coast Region (Basin Plan).

14. Beneficial uses of areal groundwater include domestic, irrigation and industrial supply. Beneficial uses of the Laguna de Santa Rosa, a tributary to the Russian River are:

    a. municipal and domestic supply
    b. agricultural supply
    c. industrial process supply
    d. groundwater recharge

e. navigation
f. hydropower generation
g. water contact recreation
h. non-contact water recreation
i. commercial and sport fishing
j. warm freshwater habitat
k. cold freshwater habitat
l. wildlife habitat
m. migration of aquatic organisms
n. spawning, reproduction, and/or early development of fish

15. Discharge prohibitions contained in the Basin Plan apply to this site. State Water Resources Control Board Resolution 68-16 applies to this site. State Water Resources Control Board Resolution 92-49 applies to this site and sets out the "Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Section 13304 of the California Water Code."

16. Water quality objectives exist to ensure protection of the beneficial uses of water. Where multiple beneficial uses of water exist, the most stringent water quality objectives for protection of all beneficial uses are selected as the protective water quality criteria. Alternative cleanup and abatement actions that evaluate the feasibility of, at a minimum: (1) cleanup to background levels, (2) cleanup to levels attainable through application of best practicable technology, and (3) cleanup to water quality objectives, need to be considered. The following table sets out the water quality objectives for surface and groundwaters at the site:

Constituent of Concern	Background Level ug/l	Water Quality Objective ug/l	Reference for Objective
Benzene	<0.5	1.0	California DHS MCL, Title 22 of the California Code of Regulations, § 64444 is 1.0 ug/l for domestic supply; USEPA health advisory for cancer risk is 0.7 ug/l; applied to the narrative TOXICITY objective in the Basin Plan
Toluene	<0.5	42	California DHS MCL, Title 22 of the California Code of Regulations, § 64444 is 150 ug/l for domestic supply; USEPA taste and odor threshold of 42 ug/l, Federal Register 54(97):22064-22138; applied to the TASTE AND ODOR water quality objective for domestic supply in the Basin Plan
Ethylbenzene	<0.5	29	California DHS MCL, Title 22 of the California Code of Regulations, § 64444 is 700 ug/l; USEPA taste and odor threshold of

Constituent of Concern	Background Level ug/l	Water Quality Objective ug/l	Reference for Objective
			29, Federal Register 54(97):22064-22138; applied to the TASTE AND ODOR water quality objective for domestic supply in the Basin Plan
Xylene	<0.5	17	California DHS MCL, Title 22 of the California Code of Regulations, § 64444 is 1750 ug/l for domestic supply; USEPA taste and odor threshold of 17, Federal Register 54(97):22064-22138; applied to the TASTE AND ODOR water quality objective for domestic supply in the Basin Plan
1,2-Dichloroethane	<0.5	0.5	California DHS MCL, Title 22 § 64444.5 is 0.5 ug/l for domestic supply; applied to the TASTE AND ODOR water quality objective for domestic supply in the Basin Plan
Total Petroleum Hydrocarbons as gasoline (TPH-g)	<50.0	50.0	Published literature provides a taste and odor threshold of 5 ug/l which is applied to the narrative TASTE and ODOR objective of the Basin Plan for domestic supply, but detection limit is 50 ug/l and is controlling
MtBE	<5.0	5.0	OEHHA secondary MCL for taste and odor threshold of 5 ug/l which is applied to the narrative TASTE and ODOR water quality objective for domestic supply in the Basin Plan
Total Petroleum Hydrocarbons as diesel (TPH-d)	<50.0	56.0	USEPA health advisory of September 4, 1992, Suggested No Adverse Response Level of 56 ug/l which is applied to narrative TOXICITY water quality objective for domestic supply in the Basin Plan

17. Reasonable costs incurred by Regional Water Board staff in overseeing cleanup or abatement activities are reimbursable under Section 13304 of the California Water Code.

18. The Regional Water Board will ensure adequate public participation at key steps in the remedial action process, and shall ensure that concurrence with a remedy for cleanup and abatement of the discharges at the site shall comply with the California Environmental Quality Act.

19. The issuance of this Cleanup and Abatement Order is an enforcement action being taken for the protection of the environment and, therefore, is exempt from the

provisions of the California Environmental Quality Act (Public Resources Code, Section 21000 et. seq.) in accordance with Section 15308 and 15321, Chapter 3, Title 14 of the California Code of Regulations.

THEREFORE, IT IS HEREBY ORDERED that, pursuant to California Water Code Sections 13267(b) and 13304, the dischargers shall cleanup and abate the discharge and threatened discharge of halogenated volatile organic compounds and petroleum hydrocarbons forthwith and shall comply with the following provisions of this Order:

1. Conduct all work under the direction of a California professional civil engineer or registered geologist experienced in remediation of soil and groundwater contaminated with halogenated volatile organic compounds.

2. Comply with all provisions of the Monitoring and Reporting Program No. 95-41 and subsequent revisions thereof.

3. Submit by January 12, 2001, a revised draft Corrective Action Plan (CAP), including a feasibility study, to clean up the underlying groundwater at the site and in the affected vicinity to water quality objectives or more stringent levels that fully restore the beneficial use of municipal supply, in compliance with State Water Resources Control Board Resolution 92-49. The draft CAP shall also describe abatement activities necessary to restore the beneficial use of Well No. 4 through the provision of alternative water supplies or other similar measures. The draft CAP shall also include a schedule and commitment by the dischargers to implement the CAP.

4. Commence implementation of the draft CAP submitted under Provision 3, above, within 10 days of concurrence by the Regional Water Board Executive Officer.

5. Submit, for the Executive Officer's concurrence, a report of implementation of the CAP within 120 days of commencement of the CAP pursuant to Provision 4, above. The report shall include recommendations and a scope of work for any additional characterization and a time schedule and associated costs for additional deliverables including, but not limited to, a human health and ecological risk assessment which will assess off-site as well as onsite exposure potential.

6. Provide monthly progress reports describing all actions taken to comply with this Order. Reports shall contain sufficient detail to determine progress and interactions/coordination between the public, agencies, and other interested parties.

7. Comprehensively assess all interim and final remedial actions annually for effectiveness. An annual report containing the findings from the assessment shall be submitted by March 31, of the following year.

8. Provide copies of all correspondence and documents relating to this investigation and cleanup simultaneously to the Regional Water Board and the City of Sebastopol.

9. Promptly pay no later than 30 days after receipt of invoice, in accordance with the invoicing instructions, any and all invoices for Regional Water Board oversight, including associated oversight costs for the Office of Environmental Health Hazard Assessment review of necessary documents including the ecological and human health risk assessments associated with cleanup and abatement of the pollution at the site under this Order.

10. If, for any reason, the dischargers are unable to perform any activity or submit any documentation in compliance with the work schedule contained in this order or submitted pursuant to this order and approved by the Executive Officer, the dischargers may request in writing, an extension of time as specified. The extension request must be submitted five days in advance of the due date and shall include justification for this delay including the good faith effort performed to achieve compliance with the due date. The extension request shall also include a proposed time schedule with new performance dates for the due date in question and all subsequent dates dependent on the extension. A written extension may be granted for good cause, in which case this order will be revised accordingly.

Ordered by _____
Lee A. Michlin
Executive Officer

December 11, 2000